TITAN™ T2

Charger / Power Supply

OWNER'S MANUAL

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INTRODUCTION

The TITAN T2 is a simultaneous 2 position Interactive fast charger with 70 watt DC camera power supply. It incorporates all of the Logic Series circuits that are employed in every Anton/Bauer charger. The InterActive charge programming provides all charge termination and protection routines for safe, reliable, chemistry independent charging.

Like all Anton/Bauer chargers, everything is automatic. Once a battery is placed onto the charger, it will automatically go into one of the Three Stage Charging modes. When the Titan T2 is being used as a power supply, the battery (right side only) functions as an automatic backup, just in case AC power is lost.

FEATURES

- Two independent 70 Watt Power Supplies – one for charging or DC power, and one exclusively for charging.
- Fast Charging. One hour with most batteries (2 hours with HyTRON series and 3 hours with Dionic batteries).
- Wide Range Input (90-250vac 50/60Hz).
- Six (6) Independent Charge Termination Systems.
- Lightweight (2.7lbs.)

SAFEGUARDS

Power Sources: This unit was designed to operate at mains voltages from 90 to 250 Volts AC, 50-60 Hz.

Risk of Electrical Shock: Refer servicing to qualified service personnel.

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

GROUNDING/EARTHING

IMPORTANT WARNING: THIS APPARATUS MUST BE EARTHED.

To ensure safe operation, the three pin plug supplied must be inserted only into a standard three-pin power point which is effectively grounded through the normal household wiring. Extension cords used with the equipment must be three-conductor and be correctly wired to provide connection to earth ground. Improperly wired extension cords are a dangerous electrical hazard.

The fact that the equipment operates satisfactorily does not imply that the power point is properly grounded and that the installation is completely safe. If any doubt exists about the correct grounding of the power point, consult a qualified electrician.

IMPORTANT: The wires in this mains lead are colored in accordance with the following code:

Green and yellow	Earth
Blue	Neutral
Brown	Live

Charging

As with all Anton/Bauer chargers, charging with TITAN T2 is fully automatic. Mount any Digital Logic Series or Logic Series battery to the TITAN T2 and it will automatically determine the appropriate charge routine and execute it.

Applications

The Titan T2 will charge any Anton/Bauer Logic Series Gold Mount battery including model: ProPac 13/14, Trimpac 13/14, Digital ProPac 13/14, Digital Trimpac 13/14, HyTRON, Dionic 80 or ProFormer battery.

NOTE: Anton/Bauer recommends that each battery have a charge position, for when the battery is not in use. A battery can remain on an Anton/Bauer charger indefinitely.

The TITAN T2 incorporates the exclusive InterActive communication between battery and charger, which allows the charger to identify any Anton/Bauer battery attached and determine the precise charge routine for that battery under the prevailing conditions.

NOTE: Due to the specialized communications between the charger and the battery, batteries without the Logic Series construction and communication capability (manufactured by Anton/Bauer before 1989 as well as so-called "rebuilds") can not be charged with this charger. The InterActive communication of Logic Series batteries is the key which allows the TITAN T2 to safely identify and address new style and chemistry batteries as they are developed. Moreover, this communication ensures that batteries contain the quality cells, workmanship and safety of genuine Anton/Bauer products. If a non-Logic Series battery is placed on the charger, the red and green LED indicators will flash alternately. This indication means that the battery cannot communicate its identity to the TITAN T2 and is not charging. After 45 seconds of flashing green and red LED's, the red LED will remain on, indicating a HOLD state.

WARNING: USE OF THIS CHARGER WITH ANY BATTERY NOT MANUFACTURED BY ANTON/BAUER MAY RESULT IN BATTERY DAMAGE AND CAUSE RISK OF FIRE OR PERSONAL INJURY. ANTON/BAUER ACCEPTS NO RESPONSIBILITY FOR ANY INJURY OR DAMAGE ASSOCIATED WITH THE USE OF BATTERIES NOT MANUFACTURED (OR BATTERIES SERVICED OTHER THAN) BY ANTON/BAUER. SUCH USE WILL VOID ANY WARRANTY.

Three Stage Charging Methodology

In general, the TITAN T2 will deliver a **three stage charge routine** to each battery.

1. **Stage One** will deliver a high rate charge matched to the capabilities of the battery (typically a one or two hour rate, depending on battery type). During this stage, six separate cutoff methods are in operation, simultaneously, ensuring the fastest, safest charge for that battery:

   TCO - Temperature cutoff which stops the Stage one charge precisely when a temperature indicative of full charge is reached;

   Dt/dT - A microprocessor based algorithm which measures a rise in temperature over a specific time, very accurately indicating full charge. This method is also the recommended method for charging Ni-MH technology;

   -ΔV - A method to determine the end of stage one charging by identifying a characteristic "reverse slope" of a Ni-Cd cell. Since this characteristic can be disguised by the age, temperature and the number of the cells in a battery, it can never be employed alone;

   CCO - This method requires the identification of the particular battery size (capacity) and chemistry, an exclusive Anton/Bauer Logic Series feature. The charger determines the maximum charge time for the particular battery and uses this information to ensure that overcharge conditions are avoided.

   FUL - This determination is made when a fully charged DIGITAL battery is returned to a charger within specified parameters of time, temperature, and battery voltage. The DIGITAL battery communicates its fully charged condition and the charger confirms the parameters and immediately indicates a fully charged condition, without additional verification.

   TEMPERATURE COMPENSATED VCO – For HyTRON series of batteries. Optimizes VCO cutoff to operate only within certain temperature parameters.

   In addition, a voltage limiting constant current Stage One routine address the critical parameters of DIONIC batteries.

2. **Stage Two** charging is a BALANCING or "stabilizing" mode which calculates each battery pack type to offset any imbalance of the battery's cells, created by unequal self discharge or any capacity mismatch of the individual cells in the pack. This stage can vary in duration from zero to as much as 16 hours, depending on the condition of the battery. The Stage Two charge for DIONIC batteries reduces current automatically as the battery charges maintaining the lithium ion cells at a safe voltage level. A battery will typically leave Stage Two in 2-4 hours under average operating conditions.

3. **Stage Three** charging is the Anton/Bauer exclusive Lifesaver maintenance mode. This patented pulse routine keeps batteries fully charged, free from self-discharge - indefinitely - without damaging heat associated with a so-called "trickle charge". The Stage Three programming for DIONIC monitors the self discharge of the battery, providing charge only when the battery self discharges to about 95% of its capacity.

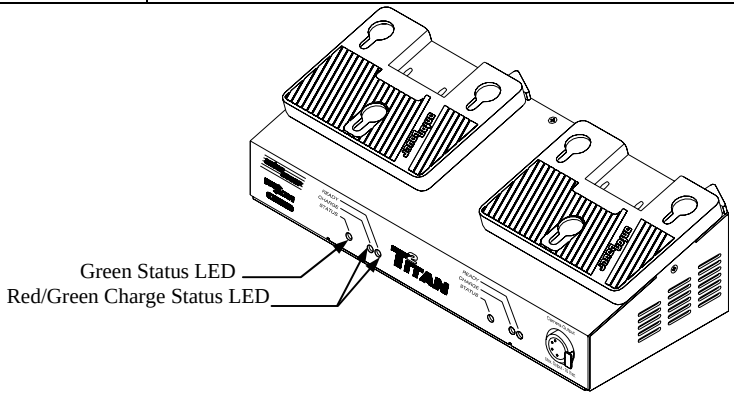
NOTE: Batteries may be kept on a charger until ready for use. The Lifesaver mode will keep them 100% charged.

LED Indications

The TITAN T2 has two sets of three LEDs (one red, two green). The green status LED indicates: Steady green – line voltage is present with no power drawn through camera output; Flashing green - line voltage is present, powering camera; Off – line voltage not present, camera powered by battery, if there is a battery presently mounted on Titan T2.

The red and green charge status LED's indicate the charging status of the battery. The following table identifies all of the LED indications and their meaning. Please note that the right side charge position will not illuminate the red or green LEDs when power is being drawn from the 4 pin XLR.

LED INDICATION	MEANING
Alternating Red & Green	Indicates that the TITAN T2 is evaluating the battery and/or communicating with a DIGITAL battery, loading battery parameters and determining the appropriate charge routine. A low voltage (<11V) battery will cause this indication to continue until the battery reaches safe charging voltage.
Steady Red	Indicates that the battery is being held by the TITAN T2 to stabilize an out-of-range temperature condition. Or it can also indicate if a non-Anton/Bauer Logic Series battery has been mounted on the charger. These batteries cannot identify themselves to the TITAN T2 and will not be charged.
Flashing Red	Indicates that the battery is currently under Stage One charge.
Flashing Green (slow rate)	Indicates that the battery is currently under Stage Two charge.
Flashing Green (fast rate)	Indicates a fully charged DIGITAL battery is placed on the charger and a FUL cutoff condition cannot be met. The charger is VERIFYING that the battery is in a full charge condition.
Steady Green	Indicates that the battery is READY and in Stage Three Lifesaver mode.



OPERATION AS DC CAMERA SUPPLY FROM MAINS

The TITAN T2 will automatically operate as a DC power supply once power is drawn from the 4 pin XLR, for example, when the camera, or other device is turned on. There are no switches, it is fully automatic. The green status LED will flash indicating that the unit is operating as a power supply.

Once the camera or other device drawing power from 4 pin XLR is turned off the Titan T2 will revert to charging the battery. If the DC power supply has been powering for any time period less than 5 minutes the Titan T2 will continue charging the battery remembering where it left off; if the DC power supply has been powering for any time period greater than 5 minutes, the battery will be re-evaluated prior to continuing charge.

If AC line voltage is removed from the TITAN T2, and a charged battery is mounted on the right side of the unit, power from the battery will be routed to the camera. If AC line voltage is restored and camera is turned off within 5 minutes, charger will continue charging where it left off, otherwise, when AC line power is restored and camera is turned off, battery will be re-evaluated.

- When powering a camera with AC line power applied, a green status LED will blink once a second.
- When powering a camera with battery and no AC line power applied, no LEDS will be lit.
- The power supply mode ONLY operates on the right side of the Titan T2.

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment has been approved by one or more agencies. All changes and/or modifications not expressly approved by Anton Bauer, Inc. could void the users' warranty and authority to operate this equipment. There are no serviceable parts in this equipment.

SPECIFICATIONS

Size	11.5" x 4.5" x 3.5"
Weight	2.7lbs. (1.23kg)
Input Voltage	90-250VAC 50/60 Hz
Output Voltage*	16 VDC
Maximum Power*	70 watts at 16.4 volts
Fuse Rating	5 amp (PCB Mounted)

*IN CAMERA POWER MODE AT 4 PIN XLR CONNECTOR.

FUSE/TYPE REPLACEMENT

The fuse of the TITAN T2 is a PCB mounted device which should only be replaced by a qualified service technician.

WARRANTY

IMPORTANT: PLEASE MAIL WARRANTY REGISTRATION CARD WITHIN TEN (10) DAYS OF PURCHASE. We must have this card on file with our Customer Support Group to establish this warranty. Proper registration will also enable us to provide update information on the battery system.

All new Anton/Bauer products have been thoroughly tested and inspected prior to shipment. This product is warranted against defect in materials and workmanship for a period of one (1) year from date of purchase. If this product fails to perform to its specifications during this period, it will be repaired or replaced at Anton/Bauer's option. This Warranty does not cover damage resulting from accident, misuse, neglect, or improper service or maintenance. Use of unauthorized service replacement parts or attachments will void this Warranty. Misuse includes any use of this product in other than its intended applications. No responsibility is assumed for any special, incidental or consequential damages. No other Warranty, written, oral or implied is assumed or authorized by Anton/Bauer. The liability of Anton/Bauer hereunder is expressly limited to a claim for a repair or replacement for the goods sold or as otherwise stated herein.

This Warranty is to be construed and enforced in accordance with the law of the State of Connecticut, including the provisions of the Uniform Commercial Code as adopted and, from time to time, amended in the State of Connecticut and not the Convention for the International Sale of Goods. This choice of Connecticut law is exclusive of any Connecticut law that would require reliance on any law foreign to Connecticut. Should any action of law or in equity be brought by any person under this Warranty, such action shall be brought only in the United States District Court for the District of Connecticut, or in any Superior Court in Fairfield County, Connecticut, U.S.A.

If you have any questions regarding applications or specifications, or to obtain warranty service on this or any Anton/Bauer product, contact the Anton/Bauer Customer Support Group. See back page for contact information.

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The power behind the best cameras capturing the best images in the world.℠

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